

ABSTRACT

A pool of integers is managed by dividing the pool of integers into groups and initializing, in memory, doubly linked lists related to the groups on an as needed basis in response to requests to allocate integers. If an initialized group of integers no longer includes any allocated integers, the doubly linked list related to the group is deleted from memory. Memory locations of the group-specific doubly linked lists are identified by a hash table that includes a unique hash table pointer for each one of the groups. Each element of the doubly linked list includes a next pointer for identifying a next element and a previous pointer for identifying a previous element. A specific free integer can be allocated in an order of one, $O(1)$, operation by indexing into the linked list and utilizing the next and previous pointers of the linked list element to remove the linked list element from the linked list.